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TI Epoxy resin compositions and semiconductor devices with good solder and thermal shock resistances, moldability, and less package warpage
IN Sameshima, Kenji
PA Sumitomo Bakelite Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 14 pp.
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LA Japanese
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* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

AB Title compns. comprise (A) epoxy resins contg. (a) 40-60% .gtoreq.1 epoxy resins chosen from I and II (A = G = glycidyl; R = halogen, C1-12 alkyl; l = 1-10; m = 0-3; n = 0-4) and (b) 40-60% cryst. epoxy resins (m.p. = 50-150.degree.), (B) phenolic resin curing agents contg. .gtoreq.80% phenolic resins I (A = H), (C) curing accelerators, and (D) 80-85% (based on the compn.) fused silica powders and show melt viscosity (MV; at molding temp.) 2-10 Pa-s, dimensional change rate of the cured product (DCR) .ltoreq.0.30%, and glass transition temp. (Tg) .gtoreq.150.degree.. Semiconductor devices are obtained by mounting semiconductor chips on one side of a substrate and sealing with the above compns. on one side of the substrate. Thus, a compn. contg. Epikote 1032H (I, A = glycidyl, n = 0, l = 1-10) 5.1, YX 4000H (biphenyl epoxy resin; m.p. = 105.degree.) 5.1, MEH 7500 (I; A = H; m, n = 0; l = 1-10) 5.5, Ph3P 0.1, spherical fused silica 83.0, KBM 503 0.6, carnauba wax 0.3, and carbon black 0.3 part showed MV = 5 Pa-s, DCR = 0.23%, and Tg = 170.degree. and gave a semiconductor device with good solder and thermal shock resistances and less package warpage.

ST solder thermal shock resistance epoxy resin; semiconductor sealant epoxy resin blend; phenolic resin crosslinking agent epoxy resin; catalyst crosslinking epoxy resin blend; fused silica epoxy resin semiconductor sealing

IT Phenolic resins, properties
RL: DEV (Device component use); MOA (Modifier or additive use); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(crosslinking agents; epoxy resin compns. for sealing semiconductor devices with good solder and thermal shock resistances, moldability, and less package warpage)

IT Crosslinking catalysts
Electronic packaging materials
Semiconductor devices

(epoxy resin compns. for sealing semiconductor devices with good solder
and thermal shock resistances, moldability, and less package warpage)
IT Epoxy resins, properties
RL: DEV (Device component use); POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(epoxy resin compns. for sealing semiconductor devices with good solder
and thermal shock resistances, moldability, and less package warpage)
IT Phenolic resins, properties
Phenolic resins, properties
RL: DEV (Device component use); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(epoxy; epoxy resin compns. for sealing semiconductor devices with good
solder and thermal shock resistances, moldability, and less package warpage)
IT Crosslinking agents
(phenolic resins; epoxy resin compns. for sealing semiconductor devices
with good solder and thermal shock resistances, moldability, and less package warpage)
IT Epoxy resins, properties
Epoxy resins, properties
RL: DEV (Device component use); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(phenolic; epoxy resin compns. for sealing semiconductor devices with good solder and thermal shock resistances, moldability, and less package warpage)
IT **174882-88-3**, E 1032H
RL: DEV (Device component use); POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(Epikote 1032H; epoxy resin compns. for sealing semiconductor devices with good solder and thermal shock resistances, moldability, and less package warpage)
IT **112755-07-4**, MEH 7500
RL: DEV (Device component use); MOA (Modifier or additive use); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(MEH 7500; epoxy resin compns. for sealing semiconductor devices with good solder and thermal shock resistances, moldability, and less package warpage)
IT 221872-50-0P 221872-51-1P 221872-52-2P 222162-60-9P
RL: DEV (Device component use); IMF (Industrial manufacture); PRP (Properties); PREP (Preparation); USES (Uses)
(crosslinked; epoxy resin compns. for sealing semiconductor devices with good solder and thermal shock resistances, moldability, and less package warpage)
IT 603-35-0, Triphenylphosphine, uses
RL: CAT (Catalyst use); USES (Uses)
(crosslinking catalyst; epoxy resin compns. for sealing semiconductor devices with good solder and thermal shock resistances, moldability, and less package warpage)
IT 50-00-0DP, Formaldehyde, polymers with epoxy resins, phenol, and phenol glycidyl ether, preparation 108-95-2DP, Phenol, polymers with epoxy resins, phenol glycidyl ether, and formaldehyde, preparation 122-60-1DP,
Phenol glycidyl ether, polymers with epoxy resins, phenol, and formaldehyde 222053-12-5DP, polymers with phenol, phenol glycidyl ether,

and formaldehyde
RL: DEV (Device component use); IMF (Industrial manufacture); PRP (Properties); PREP (Preparation); USES (Uses)
(epoxy resin compns. for sealing semiconductor devices with good solder
and thermal shock resistances, moldability, and less package warpage)
IT 60676-86-0, Fused silica
RL: DEV (Device component use); MOA (Modifier or additive use); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(epoxy resin compns. for sealing semiconductor devices with good solder
and thermal shock resistances, moldability, and less package warpage)
IT 89118-70-7, YX 4000H 93705-67-0 186104-75-6 221872-49-7
222053-12-5 222162-59-6
RL: DEV (Device component use); POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(epoxy resin compns. for sealing semiconductor devices with good solder
and thermal shock resistances, moldability, and less package warpage)